

# WATFORD PLASTICS LTD

## THE NEW NAME IN ENGINEERING PLASTICS

### ABOUT THIS CHART

This chart contains general information and is intended as an introduction guide to the range of Engineering Plastic Materials available from WATFORD PLASTICS LTD.

We are INDEPENDENT SUPPLIERS, able to supply a large range of materials to order.

### HIGH PERFORMANCE PLASTIC MATERIALS

As well as the range of materials shown in this guide there are many high performance plastic materials which WATFORD PLASTICS LTD is able to supply to order. For example, materials such as PBI, PPS, PEI, PSU, Torlon\*, PEEK and Vespel\* have specific characteristics to suit most demanding requirements.

(\*Torlon – Amoco trade name, Vespel – Du Pont trade name)

### TECHNICAL INFORMATION

Our Sales Team will be happy to supply specific technical information. Please contact the Sales Office.

### TRADE NAMES

The material names used on this chart are the chemical names. We have also shown the appropriate symbol by which many of the materials are known e.g. PTFE.

Granule manufacturers have trade names for their materials, for clarification listed opposite are some of these names and the corresponding chemical name. WATFORD PLASTICS may be able to source a specific brand of material, alternatively we can often suggest a similar material.

| Trade Name  | Chemical Name              | Manufacturer |
|-------------|----------------------------|--------------|
| Delrin      | Polyacetal Homopolymer     | Du Pont      |
| Lexan       | Polycarbonate              | G E Plastics |
| Makrolon    | Polycarbonate              | Bayer        |
| Hostaform   | Polyacetal Copolymer       | Ticona       |
| Ultraform   | Polyacetal Copolymer       | BASF         |
| Zytel       | Polyamide (Nylon)          | Du Pont      |
| Kynar       | Polyvinylidene Fluoride    | Elf Atochem  |
| Teflon PTFE | Polytetrafluoroethylene    | Du Pont      |
| Hostalen    | Polyethylene               | Ticona       |
| Hostalen PP | Polypropylene              | Ticona       |
| Arnite A    | Polyethylene Terephthalate | DSM          |

### TYPICAL APPLICATIONS

The chart shows main characteristics for materials. The correct choice of material very much depends on the item to be made, its use and the working environment. The following list gives an idea of the range of products which can be made from engineering plastic materials. For specific advice and technical information contact the WATFORD PLASTICS Sales Office.

**TYPICAL APPLICATIONS:** bearings, bottle guides, buffer blocks, bushes, cable guides, cams, chain guides, chain tensioners, cutting boards, cutting sticks, dispensing valves, doctor blades, drive belt guides, electrical insulators, feed screws, filter plates, floats, gaskets, gears, gear racks, hammer heads, impact plates, impellers, machine guards, machine screws, mixer paddles, moulds, nuts, picker blocks, pillow blocks, pistons, piston rings, profiles, pump components, rollers, rope sheaves, scrapers, screw propellers, sealing rings, self aligning bearings, shear pins, shields, spray nozzles, sprockets, star wheels, table tops, thermal insulators, strut washers, valve seats, washers, wear plates, wheels, wipers and many more.

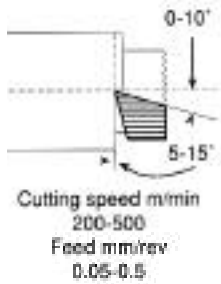
WATFORD PLASTICS AIMS TO GIVE ITS CUSTOMERS THE BEST QUALITY SERVICE  
FOR ENGINEERING PLASTIC MATERIALS.

FOR FURTHER INFORMATION CONTACT THE SALES OFFICE ON:

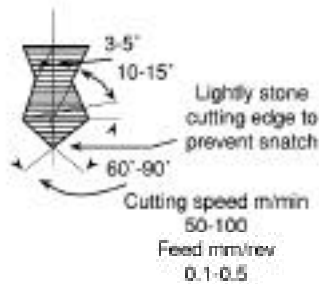
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# NOTES ON MACHINING

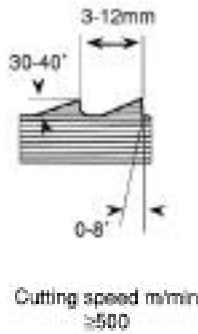
## TURNING



## DRILLING



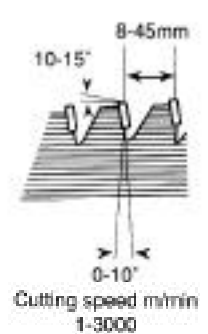
## BANDSAW



## MILLING



## CIRCULAR SAW



The materials described in this leaflet can be machined by all normal engineering methods used for metals. The only alterations required being slight adjustments to the cutting tools, to avoid generating excessive heat.

It is not practical to lay down hard and fast rules but every machinist will acquire the right technique and find that difficult materials behave distinctly. These comments should therefore only be taken as a general guide. If your particular problem is not catered for we can offer specific advice on request.

## SAWING

Coarse tooth hacksaw blades or ordinary woodsaws may be used for hand sawing.

For machine sawing, bandsaws are the most satisfactory, the best performance being obtained from skiptooth or hooktooth blades of about 4 T.P.I.

Circular woodsaws with a blade of not less than 10 to 12 inches diameter can also be used.

## TURNING

For most of the materials normal high speed steel turning tools are satisfactory although it is necessary to use carbide tipped tools for certain of the glass filled materials which are abrasive.

It is important that the front clearance angle is at least 20° and a side clearance of about 10° is used. The top rake angle is not so important and it can even be about 5° in a negative direction. When turning materials such as nylon, which do not chip, it is usually possible to grind the top rake to an angle which enables the swarf to stream out over the side of the lathe thereby avoiding the danger of wrapping around the chuck or other rotating parts of the machine.

High speeds of 500 to 1,000 feet per minute should be used. It is sometimes possible to take cuts of up to 1/4" deep, but care should be taken to avoid setting up excessive stress in the component when turning.

Feeds should be rather slow, about 0.02" to 0.10" per revolution depending on the material and type of component. Although these materials can be machined without the use of a coolant, using one should help to give a better finish.

When parting off, use of a chamfering tool immediately prior to contact by the parting tool will often eliminate burrs on the outside diameter of the work.

## DRILLING

Standard drills can be used but holes will tend to be produced undersize. It is often necessary, therefore, to grind points slightly off centre to correct this.

Slow spiral drills will usually give a better performance than normal fluted drills. **As drilling creates more heat than any other machining operation it is advisable to use a coolant whenever possible, and to frequently clear the swarf from the drill on long holes.** The cutting edge must be lightly stoned to prevent it snatching and causing the material to crack.

The rule for drilling is, the lighter the feed, the smoother the hole.

Worn drills should not be used, as a reduced diameter immediately behind the cutting edges will cause considerable trouble, because of the wedge effect created.

## REAMING

Only spiral reamers should be used and the materials will always tend to be forced away rather than cut if the reamer is not sharp.

## TAPPING AND THREADING

The tendency in tapping is for the material to be pushed away rather than cut, and a standard size tap will produce an undersized hole. Oversized taps should therefore be used, with coolant when possible.

Threading can be carried out with normal die heads although extra front clearance may be needed on the chasers, and the box cleared frequently.

Single point tools can also be used and rake angles should be ground as described for turning tools.

## MILLING AND GEAR CUTTING

Standard equipment may be used and a coolant will often assist in improving results. The materials can also be fly-cut. Speeds can be as high as 1,000 feet per minute and feeds up to 9" per minute, although a better surface will be obtained from lighter feeds. It is essential to support the work over its full length to avoid deflection when cutting.

## GRINDING

Grinding should be carried out on wet machines only. Wheels of soft open grit give best results and should be frequently dressed.

**In the operation described it is essential that tools and cutters are at all times maintained in a sharp condition. Dull edges are the most common cause of poor surface finish.**

## ACCURACY

Where close tolerances are called for it is often advisable that parts are machined to within 0.10" to 0.30" of finished size and then allowed to stand for a few hours at room temperature before final machining is carried out. All measurements should be carried out at room temperature. In a few cases stress relieving may also be necessary. Most of the materials will suitably react to a period of immersion in boiling water although if higher temperatures are needed oil can be used. We would emphasise that such stress relieving is necessary only in a rare number of instances, usually to correct cases where material has been distorted in the machining process.

## WELDING AND BONDING

Certain of these materials can be welded or bonded successfully, and information on the subject will be given on request.

To ensure dimensional stability PTFE should not be machined at temperatures below 20°.

**WATFORD PLASTICS LTD**

# **STOCK MATERIALS GUIDE**



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**WATFORD PLASTICS LTD - THE NEW NAME IN ENGINEERING PLASTICS**

# WATFORD PLASTICS STOCK MATERIALS SUMMARY

| Name  | Machinability     | Main Characteristics  | Stock Shape                      | Colour                               | Temp. Range °C               |
|---|-------------------|---|----------------------------------|--------------------------------------|------------------------------|
| <b>Rigid Polyvinyl Chloride U-PVC</b>                   | Fair              | <ul style="list-style-type: none"> <li>• Exceptionally good resistance to attack by a wide range of chemicals</li> <li>• Good electrical insulating properties • Low moisture absorption</li> <li>• Inherently self extinguishing • Easy fabrication and welding • Can be adhesive bonded • Comparatively low maximum service temperature</li> <li>• Not considered a 'self lubricating' material • Comparatively low impact strength, very notch sensitive</li> </ul>  | Rod<br>Sheet<br>Section          | White<br>Clear<br>Grey<br>Various    | ST 70<br>LT 60<br>LT -15     |
| <b>Polypropylene PP</b>                                 | Fair              | <ul style="list-style-type: none"> <li>• Exceptionally good resistance to attack by a wide range of chemicals</li> <li>• Excellent electrical insulating properties • No moisture absorption</li> <li>• Moderate strength. Very resilient • Easy fabrication and welding</li> <li>• Not self extinguishing adhesive bonded • Not considered a 'self lubricating' material • For outdoor applications use coloured material</li> </ul>   | Rod<br>Tube<br>Sheet<br>Section  | Natural<br>Beige<br>(White<br>Black) | ST 130<br>LT 95<br>LT 0      |
| <b>High Density Polypropylene HDPE</b>                  | Fair              | <ul style="list-style-type: none"> <li>• Exceptionally good resistance to attack by a wide range of chemicals</li> <li>• Excellent electrical insulating properties • No moisture absorption</li> <li>• Good impact strength even at low temperatures • Low coefficient</li> <li>• Easy fabrication &amp; welding • Comparatively low maximum service temperature</li> <li>• Not self extinguishing • For outdoor applications use black material</li> </ul>  | Rod<br>Sheet<br>Section          | Natural<br>Black                     | ST 90<br>LT 70<br>LT -80     |
| <b>Ultra High Molecular Weight Polypropylene UHMWPE</b> | Fair              | <ul style="list-style-type: none"> <li>• Exceptionally good resistance to attack by a wide range of chemicals</li> <li>• Excellent electrical properties • No moisture absorption • Exceptional impact strength maintained at relatively high values even at very low temperatures</li> <li>• Very low coefficient of friction • Minimum continuous service temperature under moderate loading - 269°C • Not self extinguishing</li> <li>• For outdoor applications use black material</li> </ul>   | Rod<br>Sheet<br>Section          | Natural<br>Black<br>Various          | ST 90<br>LT 80<br>LT <-200   |
| <b>POLYAMIDES PA (NYLON)</b>                            |                   | <p><b>Notable general characteristics are:</b> • Toughness, excellent strength to weight ratio, able to stand dynamic loads • Resistance to abrasion, low coefficient of friction • Vibration and sound dampening properties • For outdoor applications use black material</p> <p><b>Extruded:</b></p>  |                                  |                                      |                              |
| Type 6 J  | Good              | <p><b>Type 6:</b> A very tough general purpose grade with the lowest unit price. Comparatively high moisture absorption.</p>  | Rod<br>Tube<br>Sheet<br>Section  | Natural<br>Black                     | ST 150<br>LT 80<br>LT -40    |
| Type 66 uJ  | Very Good         | <p><b>Type 66:</b> Of all the unreinforced grades this type is the hardest, stiffest and has the greatest resistance to abrasion and heat deformation. Comparatively high moisture absorption.</p>  | Sheet<br>Section<br>Coiled strip | Natural<br>Black                     | ST 170<br>LT 85<br>LT -30    |
| Type 12 u   | Fair              | <p><b>Type 12:</b> Lower mechanical strength, stiffness, hardness and wear resistance than types 6 and 66, but a lower moisture absorption renders this grade more dimensionally stable, its mechanical and electrical properties are less affected by ambient relative humidity. Generally, its resistance to attack by chemicals is better than types 6 and 66.</p>   | Rod<br>Sheet<br>Section          | Natural                              | ST 120<br>LT 70<br>LT -40    |
| Cast Type 6   | Very Good         | <p><b>Cast type 6:</b> Similar to type 66. The production method offers a wide range of dimensional possibilities. Comparatively high moisture absorption.</p>  | Rod, Tube<br>Sheet<br>Section    | Natural<br>Black<br>Various          | ST 170<br>LT 90<br>LT -30    |
| <b>POLYACETAL (ACETAL) Copolymer POM</b>                | Very Good         | <ul style="list-style-type: none"> <li>• Good resistance to attack by a wide range of chemicals (Copolymer has better chemical resistance than Homopolymer)</li> <li>• Both the Copolymer and the Homopolymer have excellent mechanical and bearing properties (Homopolymer has better mechanical properties than Copolymer) • Good electrical insulating properties</li> <li>• Almost no moisture absorption • Resistance to abrasion and repeated impacts</li> <li>• Considered to machine like soft brass • Polyacetal extrusions tend to have slightly porous centres • For outdoor applications use black material</li> <li>• No self extinguishing - caution: burns almost invisibly</li> </ul> | Rod<br>Tube<br>Sheet<br>Section  | Natural<br>Black<br>Various          | ST 145<br>LT 100<br>LT -50   |
| <b>Homopolymer POM</b>                                  | Very Good         | <ul style="list-style-type: none"> <li>• Good resistance to attack by chemicals • Good electrical insulating properties</li> <li>• Almost no moisture absorption • Low coefficient of friction</li> <li>• Good dimensional stability, low creep • Comparatively hard surface resistant to abrasion • Considered one of the easiest to machine thermoplastics</li> <li>• Not considered a 'self lubricating' material</li> </ul>   | Rod<br>Sheet<br>Section          | Natural<br>Black                     | ST 160<br>LT 100<br>LT -20   |
| <b>Polyethylene Terephthalate PETP</b>                  | Very Good         | <ul style="list-style-type: none"> <li>• Good resistance to attack by chemicals • Good electrical insulating properties</li> <li>• Almost no moisture absorption • Low coefficient of friction</li> <li>• Good dimensional stability, low creep • Comparatively hard surface resistant to abrasion • Considered one of the easiest to machine thermoplastics</li> <li>• Not considered a 'self lubricating' material</li> </ul>   | Rod<br>Sheet<br>Section          | Natural<br>Black                     | ST 160<br>LT 100<br>LT -20   |
| <b>Polycarbonate PC u</b>                               | Needs Care        | <ul style="list-style-type: none"> <li>• Good electrical properties • Tough, comparatively rigid, dimensionally stable</li> <li>• Very high impact strength even at low temperatures • Good resistance to heat distortion • Easy fabrication &amp; welding • Special clear grades have excellent light transmission - up to 89% in the visible range</li> <li>• Engineering grade not suitable for optical applications</li> <li>• Not considered a 'self lubricating' material</li> </ul>  | Rod<br>Sheet<br>Section          | Natural<br>Clear<br>Clear            | ST 135<br>LT 115<br>LT -60   |
| <b>Polytetrafluoroethylene PTFE u</b>                   | Soft - Needs Care | <ul style="list-style-type: none"> <li>• Almost completely resistant to attack by chemicals • Excellent electrical insulating properties • No moisture absorption • Lowest coefficient of friction for solid material. A 'non-stick' surface to which very few substances can adhere • Self extinguishing • Minimum continuous service temperature under moderate loading - 250°C • Comparatively soft, easily deformed</li> </ul>  | Rod<br>Tube<br>Sheet<br>Section  | White<br>(natural<br>colour)         | ST 300<br>LT 260<br>LT <-200 |
| <b>Polyvinylidene Fluoride PVDF</b>                     | Good              | <ul style="list-style-type: none"> <li>• Combines a number of the useful properties of PTFE with a toughness similar to Polyamide (Nylon) • Exceptionally good resistance to attack by a wide range of chemicals • Good electrical insulating properties</li> <li>• Self extinguishing • Low coefficient of friction • Good mechanical properties</li> </ul>  | Rod<br>Sheet<br>Section          | White<br>(natural<br>colour)         | ST 160<br>LT 140<br>LT -50   |

**Name** Chemical name and symbol - see note 'Trade Names'

**Relative Cost Rating** General guide using a relative cost factor, l=low, 100=high

**Machinability** General ease of machining

**Main Characteristics** List of general properties - see note 'Technical Information'

**Stock Shape** Usual stock shape - please ask if special requirement

**Colour** Usual stock colour - please ask if special requirement

**Temp. Range °C** Suggested working temperature range in air. ST= short term

**u MATERIALS AVAILABLE GLASS-FILLED:** impact strength, toughness and coefficient of friction.

Polyamide type 66 & type 12, Polycarbonate, PTFE

**MATERIALS AVAILABLE MoS<sub>2</sub> FILLED:** The addition of glass fibres affects mechanical properties: increasing the tensile strength, the compressive strength, the modulus of elasticity and the Molybdenum Disulphide, a dry powder lubricant, the rate at which the bearing surfaces (particularly when the part is a metal component) are abraded. MoS<sub>2</sub> mainly affects the mechanical properties: increasing the tensile strength, the modulus of elasticity and the maximum service temperature

# WATFORD PLASTICS ROD STOCK

| Dia mm | Nylon 6<br>Nat Black | Nylon 66<br>Nat Black Glass-filled | Natural<br>Cast<br>Nylon 6 | Nylon 12<br>Nat Glass-filled | Nylatron | Acetal<br>Copolymer<br>Nat Black | Acetal<br>Homopolymer<br>Nat Black | Polycarbonate<br>Nat Glass-filled | Polypropylene | UHMWPE | PTFE | PETP | U-PVC | Dia mm |
|--------|----------------------|------------------------------------|----------------------------|------------------------------|----------|----------------------------------|------------------------------------|-----------------------------------|---------------|--------|------|------|-------|--------|
| 3      |                      |                                    |                            |                              |          | *                                |                                    |                                   |               |        |      |      |       | 3      |
| 4      |                      | *                                  |                            |                              |          | *                                |                                    |                                   |               |        | *    |      |       | 4      |
| 5      | * *                  | *                                  |                            |                              |          | * *                              | *                                  |                                   |               |        | *    |      | *     | 5      |
| 6      | * *                  | *                                  |                            |                              | *        | * *                              | *                                  | *                                 |               |        | *    |      | *     | 6      |
| 7      |                      |                                    |                            |                              |          |                                  |                                    |                                   |               |        | *    |      |       | 7      |
| 8      | * *                  | *                                  |                            |                              | *        | * *                              | *                                  | *                                 | *             |        | *    | *    | *     | 8      |
| 10     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 10     |
| 12     | * *                  | * *                                |                            | *                            | *        | * *                              | * *                                | *                                 | *             | *      | *    | *    | *     | 12     |
| 13     |                      |                                    |                            |                              |          |                                  |                                    |                                   |               |        | *    |      |       | 13     |
| 14     | *                    | *                                  |                            |                              |          | * *                              | *                                  |                                   |               |        | *    |      |       | 14     |
| 15     | * *                  | * *                                | *                          |                              |          | * *                              | * *                                |                                   | *             | *      | *    | *    | *     | 15     |
| 16     | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                | * *                               | *             |        | *    | *    | *     | 16     |
| 18     | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 18     |
| 19     |                      |                                    |                            |                              |          |                                  | * *                                |                                   |               |        | *    |      |       | 19     |
| 20     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 20     |
| 22     | * *                  | * *                                | *                          |                              |          | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 22     |
| 25     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 25     |
| 28     | * *                  | * *                                | *                          |                              | *        | * *                              | *                                  |                                   | *             |        | *    | *    | *     | 28     |
| 30     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 30     |
| 32     | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 32     |
| 35     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                |                                   | *             | *      | *    | *    | *     | 35     |
| 36     | * *                  | * *                                | *                          |                              |          | * *                              | * *                                | *                                 |               |        | *    | *    | *     | 36     |
| 38     |                      |                                    | *                          |                              |          |                                  |                                    |                                   |               |        | *    |      |       | 38     |
| 40     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 40     |
| 45     | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                |                                   | *             | *      | *    | *    | *     | 45     |
| 50     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 50     |
| 55     | * *                  | *                                  | *                          |                              |          | * *                              | * *                                |                                   | *             | *      | *    | *    | *     | 55     |
| 56     | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 56     |
| 60     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 60     |
| 65     | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 65     |
| 70     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 70     |
| 75     | * *                  | *                                  | *                          |                              | *        | * *                              | * *                                |                                   | *             | *      | *    | *    | *     | 75     |
| 80     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 80     |
| 85     | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 85     |
| 90     | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 90     |
| 95     | * *                  | *                                  | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    |      |       | 95     |
| 100    | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 100    |
| 110    | * *                  | *                                  | *                          |                              | *        | * *                              | * *                                |                                   | *             | *      | *    | *    | *     | 110    |
| 115    | * *                  |                                    | *                          |                              |          | *                                |                                    |                                   | *             | *      | *    | *    | *     | 115    |
| 120    | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 120    |
| 125    | * *                  | *                                  | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 125    |
| 130    | * *                  | * *                                | *                          |                              | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 130    |
| 135    | * *                  | *                                  | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 135    |
| 140    | * *                  | *                                  | *                          |                              | *        | * *                              | * *                                | *                                 | *             | *      | *    | *    | *     | 140    |
| 150    | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 150    |
| 160    | *                    | *                                  | *                          |                              | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 160    |
| 165    | *                    | *                                  | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 165    |
| 170    | *                    |                                    | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 170    |
| 180    | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 180    |
| 190    | *                    |                                    | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 190    |
| 200    | * *                  | * *                                | *                          | *                            | *        | * *                              | * *                                | * *                               | *             | *      | *    | *    | *     | 200    |
| 220    | *                    |                                    | *                          |                              | *        | * *                              | * *                                |                                   | *             |        | *    | *    | *     | 220    |
| 225    |                      |                                    |                            |                              |          |                                  |                                    |                                   | *             |        |      |      | *     | 225    |
| 250    | *                    | *                                  | *                          |                              | *        | * *                              | * *                                |                                   | *             | *      |      |      | *     | 250    |
| 280    |                      |                                    | *                          |                              | *        | * *                              | * *                                |                                   | *             |        |      |      | *     | 280    |
| 300    | *                    |                                    | *                          |                              | *        | * *                              | * *                                |                                   | *             | *      |      |      | *     | 300    |
| 320    | *                    |                                    | *                          |                              | *        |                                  |                                    |                                   | *             |        |      |      | *     | 320    |
| 350    | *                    |                                    | *                          |                              | *        |                                  |                                    |                                   | *             | *      |      |      | *     | 350    |
| 400    |                      |                                    | *                          |                              | *        |                                  |                                    |                                   | *             | *      |      |      | *     | 400    |
| 500    |                      |                                    | *                          |                              | *        |                                  |                                    |                                   | *             | *      |      |      | *     | 500    |

\* = Sizes available

“Nylatron GS” (DSM Trade Name) is Nylon 66 MoS<sub>2</sub> filled plus additives, available in rod sizes up to 50mmø.  
 “Nylatron GSM” (DSM Trade Name) is Cast Nylon 6 MoS<sub>2</sub> filled plus additives, available in rod sizes from 50mmø upwards.  
 Nylon 66, Acetal, Nylatron GS: also available precision ground to tight tolerances.  
 U-PVC sizes shown - for grey material, most sizes also available in red or black. Some sizes also available in other colours.

OTHER MATERIALS

Other materials and sizes are available.  
 A range of tube is also available.  
 PLEASE ASK FOR DETAILS

# WATFORD PLASTICS SHEET STOCK

| Thickness mm                            | Nylon 6<br>Nat Black | Nylon 66 | Nylon 12* | Acetal<br>Nat Black | Nylatron<br>GS | PETP<br>Nat Black |
|---|----------------------|----------|-----------|---------------------|----------------|-------------------|
| <b>Coiled sheets nominal metre wide</b> |                      |          |           |                     |                |                   |
| 0.20                                    |                      |          |           |                     |                |                   |
| 0.30                                    | *                    |          |           | *                   |                |                   |
| 0.40                                    | *                    |          |           |                     |                |                   |
| 0.50                                    | *                    | *        |           | *                   |                |                   |
| 0.60                                    | *                    |          |           |                     |                |                   |
| 0.80                                    | *                    | *        |           | *                   |                |                   |
| 1.00                                    | *                    | *        |           | *                   |                |                   |
| 1.20                                    | *                    |          |           |                     |                |                   |
| 1.50                                    | *                    |          |           |                     |                |                   |

| <b>Flat sheets nominal metre wide</b> |   |   |   |   |            |   |
|---------------------------------------|---|---|---|---|------------|---|
| 1.00                                  | * | * | * | * |            | * |
| 1.20                                  | * |   |   | * |            |   |
| 1.50                                  | * | * |   | * | * see note | * |
| 2.00                                  | * | * | * | * |            | * |
| 2.50                                  | * |   |   | * | * see note | * |
| 3.00                                  | * | * | * | * | * see note | * |
| 4.00                                  | * | * | * | * | *          | * |
| 5.00                                  | * | * | * | * | * see note | * |
| 6.00                                  | * | * | * | * | * see note | * |
| 8.00                                  |   |   |   |   |            | * |
| 10.00                                 |   |   |   |   |            |   |

\* Thin Nylatron GS sheets are available in imperial sizes, please ask for details

| <b>Flat sheets nominal 310mm or 620mm wide x 3 metres max, length. *Nylon 12: 310mm wide only</b> |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 8   | * | * | * | * | * | * |
| 10  | * | * | * | * | * | * |
| 12  | * | * | * | * | * | * |
| 15  | * | * | * | * | * | * |
| 16  | * | * | * | * | * | * |
| 20  | * | * | * | * | * | * |
| 25  | * | * | * | * | * | * |
| 30  | * | * | * | * | * | * |
| 35  | * | * | * | * | * | * |
| 40  | * | * | * | * | * | * |
| 45  | * | * | * | * | * | * |
| 50  | * | * | * | * | * | * |
| 60  | * | * | * | * | * | * |
| 70  | * | * | * | * | * | * |
| 80  | * | * | * | * | * | * |
| 90  | * | * | * | * | * | * |
| 100   | * | * | * | * | * | * |

| Thickness mm                               | Cast Nylon 6<br>Nat &Black | Polypropylene<br>Nat &Beige | UHMWPE<br>HMWPE |
|--|----------------------------|-----------------------------|-----------------|
| <b>Flat sheets nominal 2000mm x 1000mm</b> |                            |                             |                 |
| 1  |                            | *                           | j               |
| 2  |                            | *                           | *               |
| 3  |                            | *                           | *               |
| 4  |                            | *                           | *               |
| 5  |                            | *                           | *               |
| 6  |                            | *                           | *               |
| 8  | *                          | *                           | *               |
| 10   | *                          | *                           | *               |
| 12   | *                          | *                           | *               |
| 15   |                            | *                           | *               |
| 16   | *                          |                             |                 |
| 20   | *                          | *                           | *               |
| 25   | *                          | *                           | *               |
| 30   | *                          | *                           | *               |
| 35   | *                          | *                           | *               |
| 40   | *                          | *                           | *               |
| 45   | *                          | *                           | *               |
| 50   | *                          | *                           | *               |
| 55   | *                          |                             | *               |
| 60   | *                          | *                           | *               |
| 70   | *                          | *                           | *               |
| 80   | *                          | *                           | *               |
| 90   | *                          |                             | *               |
| 100  | *                          | *                           | *               |
| 110  | *                          |                             | *               |
| 120  | *                          | *                           | *               |

j HMWPE is not available in this size

| <b>NATURAL PTFE SHEET</b> |                       |                       |                         |
|---------------------------|-----------------------|-----------------------|-------------------------|
| Thickness mm              | Size 300mm<br>x 300mm | Size 600mm<br>x 600mm | Size 1200mm<br>x 1200mm |
| 0.50                      | *                     | *                     | *                       |
| 0.75                      | *                     | *                     | *                       |
| 1.00                      | *                     | *                     | *                       |
| 1.50                      | *                     | *                     | *                       |
| 2.00                      | *                     | *                     | *                       |
| 2.50                      | *                     | *                     | *                       |
| 3.00                      | *                     | *                     | *                       |
| 4.00                      | *                     | *                     | *                       |
| 5.00                      | *                     | *                     | *                       |
| 6.00                      | *                     | *                     | *                       |
| 8.00                      | *                     | *                     | *                       |
| 10.00                     | *                     | *                     | *                       |
| 12.00                     | *                     | *                     | *                       |
| 13.00                     | *                     | *                     | *                       |
| 15.00                     | *                     | *                     | *                       |
| 16.00                     | *                     | *                     | *                       |
| 18.00                     | *                     | *                     | *                       |
| 20.00                     | *                     | *                     | *                       |
| 15.00                     | *                     | *                     | *                       |
| 16.00                     | *                     | *                     | *                       |
| 18.00                     | *                     | *                     | *                       |
| 20.00                     | *                     | *                     | *                       |
| 25.00                     | *                     | *                     | *                       |
| 30.00                     | *                     | *                     | *                       |
| 32.00                     | *                     | *                     | *                       |
| 35.00                     | *                     | *                     | *                       |
| 38.00                     | *                     | *                     | *                       |
| 40.00                     | *                     | *                     | *                       |
| 42.00                     | *                     | *                     | *                       |
| 45.00                     | *                     | *                     | *                       |
| 48.00                     | *                     | *                     | *                       |
| 50.00                     | *                     | *                     | *                       |
| 55.00                     | *                     | *                     | *                       |
| 60.00                     | *                     | *                     | *                       |
| 65.00                     | *                     | *                     | *                       |
| 70.00                     | *                     | *                     | *                       |
| 75.00                     | *                     | *                     | *                       |

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## CUTTING SERVICE

WE CAN SUPPLY ALL THE MATERIALS DETAILED AS BILLETS  
(FROM ROD) OR SECTIONS (FROM SHEET) - SAWN OR MACHINED  
TO YOUR REQUIREMENTS

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